

A NEW EAST AFRICAN TSETSE-FLY (GENUS *GLOSSINA*, WIED.), WHICH APPARENTLY DISSEMINATES SLEEPING SICKNESS.

By Major E. E. AUSTEN, D.S.O.

Although within the last few years—chiefly owing to the diagnostic ability and brilliant technical skill of Professor Robert Newstead, F.R.S.—several additions have been made to the list of recognised species of *Glossina*, the numerical total of which now stands at nineteen, the *Glossina morsitans* Group has not received a single accession. Peculiar interest therefore attaches to the discovery of the species described below, not only by reason of its apparent pathogenic importance,\* but also on account of its systematic position within the genus. The new species in question, of which, through the courtesy of the Imperial Bureau of Entomology, the types and paratypes, in addition to a series of other examples, are in the British Museum (Natural History), may be characterised as follows:—

***Glossina swynnertoni*, sp. n.** (figs. 1, 2, 3).

♂♀.—Length, ♂ (six specimens) 7·6 to 8·6 mm., ♀ (six specimens) 8·6 to 9·5 mm., width of head, ♂ 2·5 to just over 2·5 mm., ♀ 2·5 to 2·6 mm.; width of front at vertex, ♂ 0·6 mm., ♀ just under 1 mm.; length of wing, ♂ 7·8 to 8 mm., ♀ 8·6 to 9 mm.

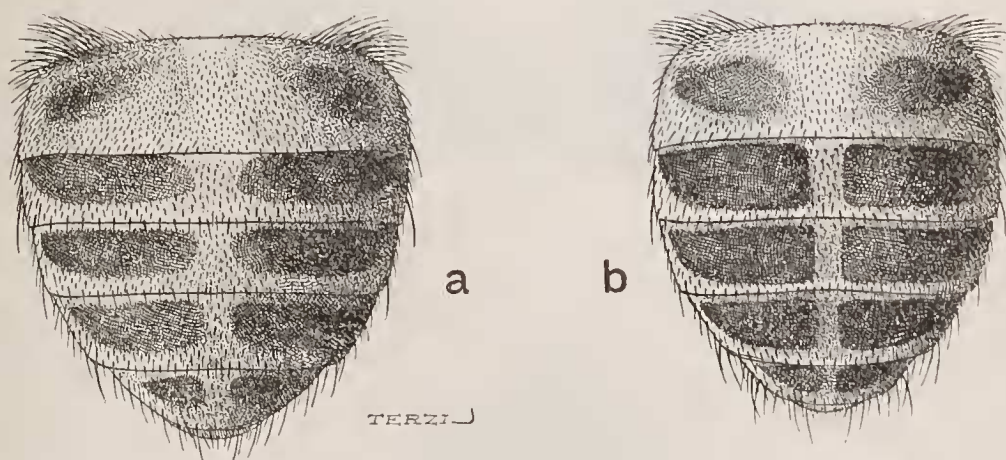


Fig. 1. Abdomens of (a) *Glossina morsitans*, Westw., ♂, and (b) *G. swynnertoni*, Austen, ♂, dorsal view,  $\times 12$ ; first (basal) tergite not shown in either case.

A member of the *Glossina morsitans* Group and closely allied to *G. morsitans*, Westw., from normal specimens of which it is at once distinguishable in the case of both sexes by its much darker coloration; by the ground-colour of the dorsum of the abdomen being drab, † light drab or drab-grey (occasionally, especially in centre of second tergite, cinnamon-buff or greyish-cinnamon-buff) instead of buff-yellow or ochraceous-buff; by the paler area in the centre of the second abdominal tergite being much less conspicuous and much

\* Cf. Mr. C. F. M. Swynnerton's statements, *infra*, p. 337.

† For names and illustrations of colours mentioned in the present paper see Ridgway, "Color Standards and Color Nomenclature." (Washington, D.C. Published by the Author, 1912.)

more restricted in extent; and by the interrupted, transverse, abdominal bands being very dark, more regular in shape, approaching closer to the hind margin of the segment in each case, and having their inner ends close together, sharply defined and terminating squarely (instead of more or less tapered-off or even obsolescent), so that the pale median interspace on the third to the fifth tergites inclusive forms a narrow, clean-cut, longitudinal stripe, which is of uniform width on the third and fourth tergites, and slightly narrower on the fifth (cp. a and b, fig. 1); distinguishable also in the male sex by the different shape, heavier chitinisation and much darker coloration of the superior claspers, by the greater size and much greater prominence of the process or tooth ("median process," "submedian process" or "submedian prominence" of Newstead) on the distal margin of each of the latter, and by the strikingly different shape of the median lobes (cf. fig. 2).

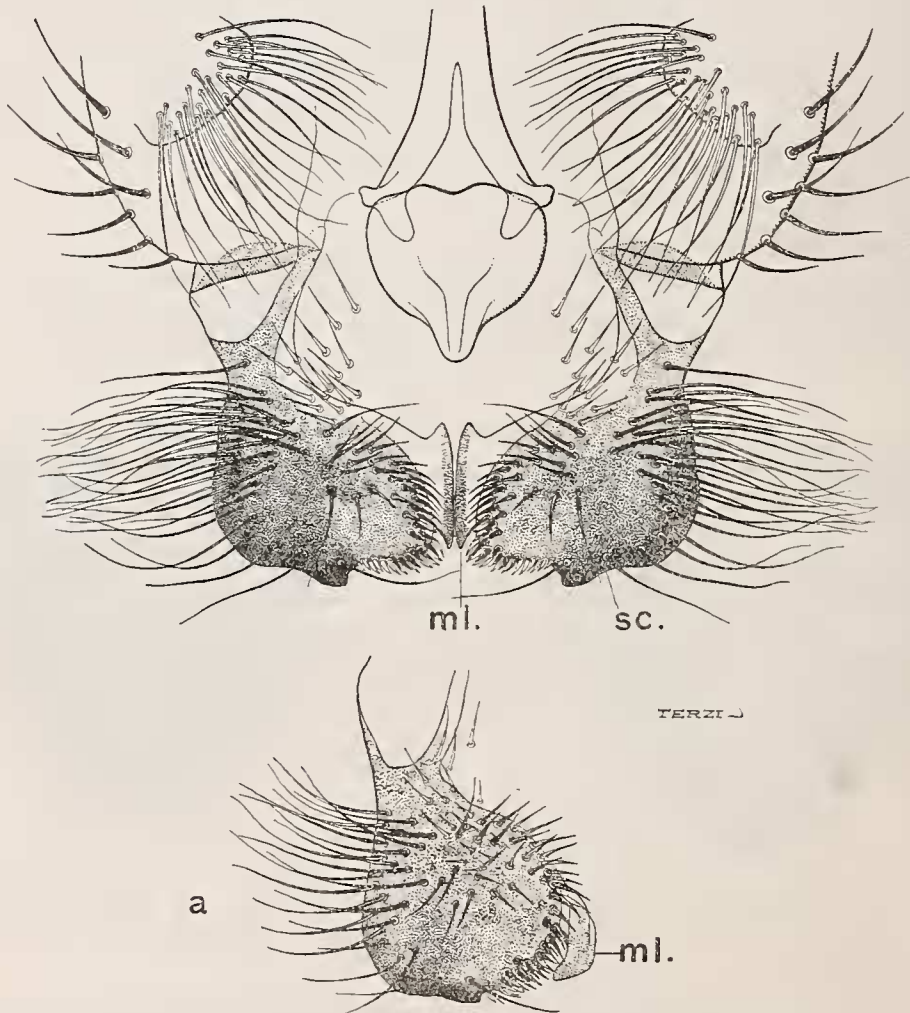


Fig. 2. Male genital armature of *Glossina swynnertoni*, Austen, ventral view; sc., superior clasper; ml., median lobe; a, right superior clasper of *G. morsitans*, Westw., for comparison; ml., median lobe.

Head in both sexes similar to that of *G. morsitans*, Westw., the dark brown blotch on upper part of lower half of each parafrontal (side of front) in ♀ usually strongly marked; antennae with distal extremity of arista in both sexes usually slightly less attenuate than in *G. morsitans*.



*Thorax* much as in *G. morsitans*, though dark markings on dorsum, especially in ♀, are often more distinct; apical scutellar bristles in ♀, as in same sex of *G. morsitans*, extremely short, reduced to mere stumps.

*Abdomen* (cf. fig. 1, b): dark blotches on second tergite in both sexes more transversely ovate than corresponding blotches in case of *G. morsitans*, and their inner extremities as a rule much more closely approximate; interrupted transverse bands on following three tergites black, blackish-brown or olivaceous-black, clearly defined in both sexes, occupying approximately the anterior three-fourths of the segment in each case, and having the posterior margin of the inner half of each half-band parallel to that of its tergite; ground-colour of sixth and seventh tergites drab-grey in both sexes, anterior half or three-fifths of sixth tergite occupied by a dark transverse band, which tapers towards each basal angle but does not reach it, while in the middle line it is sometimes only indistinctly interrupted, although strongly emarginate posteriorly; *hectors* of ♂ agreeing in shape with those of *G. morsitans* but much darker (neutral grey, deep neutral grey or dark neutral grey), usually contrasting sharply in colour with base of median triangle separating their distal extremities, whereas in *G. morsitans* the hectors are but slightly darker than corresponding triangle; *hypopygium* of ♂ pinkish-cinnamon, dusky drab or deep brownish-drab, similar in size and appearance to that of *G. morsitans*, though, if anything, slightly larger; *superior claspers* of ♂ with the transverse diameter of the distal portion of their spatulate expansions distinctly greater than in *G. morsitans* (see fig. 2), and with their *median lobes* (ml) in each case terminating distally in a sharp point, instead of having their apices blunt and divergent as in *G. morsitans* (cf. figs. 2, 2a).

*Wings, squamae and halteres* as in *G. morsitans*.

*Legs* as in *G. morsitans*, except that the local infuscation of the femora is, at least in the case of the ♂, usually more pronounced.

TANGANYIKA TERRITORY (Mwanza District): type of ♂ and type of ♀, Ididi R. six miles from Kindabu, 15.v.1922 (*P. Tully*); one ♂ paratype, Mwangwhela, 22.v.1922 (*C. F. M. Swynnerton*); four ♂ paratypes, road west of Zagayu, 26.v.1922 (*P. Tully*); three ♀ paratypes, Ngali, 17.v.1922 (*C. F. M. Swynnerton*); one ♀ paratype, between Tomao and Zagayu, 16-18.v.1922 (*P. Tully*); one ♀ paratype, Lukungu, 15.vi.1922 (*C. F. M. Swynnerton*).

In addition to the specimens selected as types and paratypes, and referred to in the foregoing paragraph, Mr. Swynnerton has brought to England several thousand males and females of the new species, collected during May and June of the present year in more than twenty different localities in the Mwanza District. A representative series of examples, selected from this material, has been examined by the writer, and in a number of instances, with the kind assistance of Mr. Swynnerton, the male genitalia have been mounted and studied under the microscope. In no case has there been detected any noteworthy variation from the typical form as described above, and in not a single instance was there any doubt that the specimen under examination was specifically distinct from *Glossina morsitans*, Westw. The diagnostic characters of the new species (printed in italics at the commencement of the above description) seem indeed to be remarkably stable. On the other hand, as is well known, *G. morsitans* often exhibits considerable variation as regards the completeness or otherwise of its abdominal markings, and certain individuals, particularly those belonging to the form *submorsitans*, Newst., sometimes present what may at first sight appear to be a deceptive similarity to *G. swynnertoni* in the shape, depth and completeness of their abdominal bands. In such cases, however, apart from the difference in the ground-colour of the abdomen that is usually noticeable, closer scrutiny will show that the hind margins of the inner halves of the dark half-bands are not so uniformly parallel to those of the respective segments as in the species just described. Finally, any doubt that may still linger can be allayed by means of an examination of the male genitalia.

For the association of the name of Mr. C. F. M. Swynnerton, Game Warden, Tanganyika Territory, with the interesting and important species characterised above no apology is needed. Mr. Swynnerton, whose admirable description of the tsetse-fly investigations carried out by him in Portuguese East Africa some four years ago will be fresh in the memory of readers of this journal,\* has kindly supplied the following note on the area in which the new species occurs, and on the impression made on him by the latter in the field.

"A great block of acacia savannah woodland, surrounded by open country, lies in the Usukuma area of the Mwanza District. It extends on the west to a few miles west of the Simiyu R.; on the east to the great Serengeti plain; on the north (in places) to the Speke Gulf, Lake Victoria, to the Ushashi escarpment and, I believe, to a point beyond Ikoma, Nyamatoki; and on the south nearly to Lake Eyasi and the Sibiti River. My specimens of *G. swynnertoni* have been taken between its western border and Mount Ngasamo (north of the Duma R.), and between Nasa, on Lake Victoria, and the foot of the Ushashi escarpment; but the whole block that I have described is infested with tsetse, and, I believe, with this particular species. The insect has also been taken in numbers by fly-boys of mine reporting to Mr. A. M. D. Turnbull on the mainland opposite Ukerewe Island (L. Victoria), and has been sent to me in abundance by Mr. G. G. Griffiths from the Chinyanga fly-belt, a smaller block of acacia woodland south-east of the main one already described.

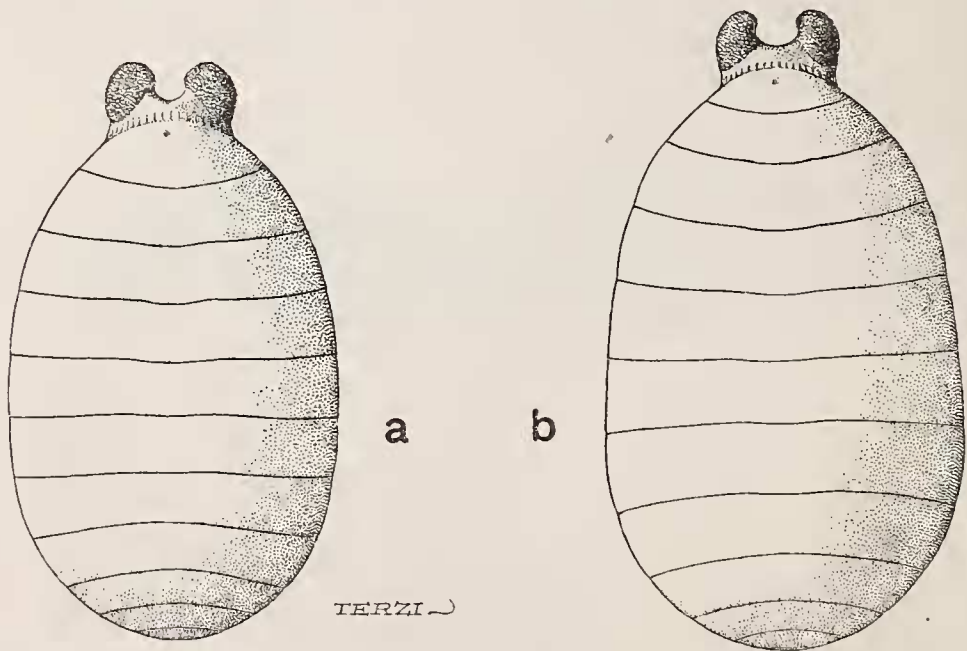


Fig. 3. Puparia of (a) *Glossina morsitans*, Westw., and (b) *G. swynnertoni*, Austen, ventral view.  $\times 12$ .

"My fly-boys, arriving in Mwanza a few days before myself, were shown specimens of this fly by Dr. G. Maclean and Mr. A. M. D. Turnbull (Medical Officer and Senior Commissioner), and were deceived by its coloration into regarding it as a form of *G. palpalis* (which they knew). They insisted that it was not *G. morsitans*, which they knew well also, having collected this species in various parts of Tanganyika Territory. I was similarly puzzled on arrival, and could think only of *G. longipalpis*

\* Cf. Swynnerton, C. F. M., "An Examination of the Tsetse Problem in North Mossurise, Portuguese East Africa"—Bull. Ent. Res., London, xi, 4, pp. 315-385, Plates ix-xvii, and Map (March 1921).

which, although I had never met with it, this fly rather resembles, except in size. On meeting with it in the field, noting its appearance when fresh, examining its genitalia and its puparia, and observing its habits, breeding and other—knowing *G. morsitans* thoroughly from all over the Territory and having had experience of that species in Portuguese East Africa—I was convinced at once that we were dealing with a new fly.”

*Puparium* of *G. swynnertoni* (fig. 3, b).—The breeding-places of this species are dealt with elsewhere in this number by Mr. Swynnerton himself.\*

Measurements of five perfect puparia examined in the position shown in fig. 3, *i.e.*, ventral side uppermost, with the tumid lips (“polypneustic lobes” of Newstead) directed away from the observer, are as follows:—length, 5·6 to 6·2 mm. ; greatest breadth (across region of sixth larval segment), 3·2 to 3·5 mm. A comparison with a series of *G. morsitans* puparia, examined in a corresponding position, shows that, although the actual dimensions of the puparium of the new species are but slightly greater, there are, as will be seen from the above figures, certain conspicuous differences. The most noteworthy of these are as follows:—

*Shape*.—Less regularly oval, the puparium of *G. swynnertoni* being widest across the region of the sixth larval segment.

*Tumid lips*.—Smaller than those of the puparium of *G. morsitans*, but separated by a wider notch.

*Notch between tumid lips*.—Closely resembling in shape that exhibited by the puparium of *G. pallidipes*, Austen.

---

\* See p. 333, and Plates xvi and xvii.